SEQUENCE LISTING

<110> BASF Plant Science GmbH

<120> TER gene of Euglena

<130> AE 20030715

<140> PF 54922

<141> 2003-10-10

<160> 11

<170> PatentIn version 3.1

<210> 1

<211> 1620

<212> DNA

<213> Euglena gracilis

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<221> CDS

<222> (1)..(1620)

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ctc tgc ctg tgc gtg gca acg gta ttg ttg gcg act gga tcc aac ccc       96
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Leu Cys Leu Cys Val Ala Thr Val Leu Leu Ala Thr Gly Ser Asn Pro
            20                  25                  30

acc gcc ctg tcc act gct tcc act cgc tct ccg acc tca ctg gtc cgt    144
Thr Ala Leu Ser Thr Ala Ser Thr Arg Ser Pro Thr Ser Leu Val Arg
        35                  40                  45

ggg gtg gac agg ggc ttg atg agg cca acc act gca gcg gct ctg acg    192
Gly Val Asp Arg Gly Leu Met Arg Pro Thr Thr Ala Ala Ala Leu Thr
    50                  55                  60

aca atg aga gag gtg ccc cag atg gct gag gga ttt tca ggc gaa gcc    240
Thr Met Arg Glu Val Pro Gln Met Ala Glu Gly Phe Ser Gly Glu Ala
65                  70                  75                  80

acg tct gca tgg gcc gcc gcg ggg ccg cag tgg gcg gcg ccg ctc gtg    288
Thr Ser Ala Trp Ala Ala Ala Gly Pro Gln Trp Ala Ala Pro Leu Val
                85                  90                  95

gcc gcg gcc tcc tcc gca ctg gcg ctg tgg tgg tgg gcc gcc cgg cgc    336
Ala Ala Ala Ser Ser Ala Leu Ala Leu Trp Trp Trp Ala Ala Arg Arg
            100                 105                 110

agc gtg cgg cgg ccg ctg gca gcg ctg gcg gag ctg ccc acc gcg gtc    384
Ser Val Arg Arg Pro Leu Ala Ala Leu Ala Glu Leu Pro Thr Ala Val
        115                 120                 125

acc cac ctg gcc ccc ccg atg gcg atg ttc acc acc aca gcg aag gtc    432
Thr His Leu Ala Pro Pro Met Ala Met Phe Thr Thr Thr Ala Lys Val
    130                 135                 140

atc cag ccc aag att cgt ggc ttc atc tgc acg acc acc cac ccg atc    480
Ile Gln Pro Lys Ile Arg Gly Phe Ile Cys Thr Thr Thr His Pro Ile
145                 150                 155                 160

ggc tgt gag aag cgg gtc cag gag gag atc gcg tac gcc cgt gcc cac    528
Gly Cys Glu Lys Arg Val Gln Glu Glu Ile Ala Tyr Ala Arg Ala His
                165                 170                 175

ccg ccc acc agc cct ggc ccg aag agg gtg ctg gtc atc ggc tgc agt    576
Pro Pro Thr Ser Pro Gly Pro Lys Arg Val Leu Val Ile Gly Cys Ser
            180                 185                 190

acc ggc tac ggg ctc tcc acc cgc atc acc gct gcc ttc ggc tac cag    624
Thr Gly Tyr Gly Leu Ser Thr Arg Ile Thr Ala Ala Phe Gly Tyr Gln
        195                 200                 205

gcc gcc acg ctg ggc gtg ttc ctg gcg ggc ccc ccg acg aag ggc cgc    672
Ala Ala Thr Leu Gly Val Phe Leu Ala Gly Pro Pro Thr Lys Gly Arg
    210                 215                 220

ccc gcc gcg gcg ggc tgg tac aac acc gtg gcg ttc gag aag gcc gcc    720
Pro Ala Ala Ala Gly Trp Tyr Asn Thr Val Ala Phe Glu Lys Ala Ala
225                 230                 235                 240

ctg gag gcc ggg ctg tac gcc cgg agc ctt aat ggc gac gcc ttc gac    768
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Leu Glu Ala Gly Leu Tyr Ala Arg Ser Leu Asn Gly Asp Ala Phe Asp
                245                 250                 255

tcc aca acg aag gcg cgg acg gtc gag gcg atc aag cgg gac ctc ggc      816
Ser Thr Thr Lys Ala Arg Thr Val Glu Ala Ile Lys Arg Asp Leu Gly
            260                 265                 270

acg gtg gac ctc gtg gtg tac agc atc gcc gcc ccg aag cgg acg gac      864
Thr Val Asp Leu Val Val Tyr Ser Ile Ala Ala Pro Lys Arg Thr Asp
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cct gcc acc ggc gtc ctc cac aag gcc tgc ctg aag ccc atc ggc gcc      912
Pro Ala Thr Gly Val Leu His Lys Ala Cys Leu Lys Pro Ile Gly Ala
    290                 295                 300

acg tac acc aac cgc act gtg aac acc gac aag gcg gag gtg acc gac      960
Thr Tyr Thr Asn Arg Thr Val Asn Thr Asp Lys Ala Glu Val Thr Asp
305                 310                 315                 320

gtc agc att gag ccg gcc tcc ccc gaa gag atc gcg gac acg gtg aag     1008
Val Ser Ile Glu Pro Ala Ser Pro Glu Glu Ile Ala Asp Thr Val Lys
                325                 330                 335

gtg atg ggc ggg gag gac tgg gag ctc tgg atc cag gcg ctg tcg gag     1056
Val Met Gly Gly Glu Asp Trp Glu Leu Trp Ile Gln Ala Leu Ser Glu
            340                 345                 350

gcc ggc gtg ctg gcg gag ggg gcc aag acg gtg gcg tac tcc tac atc     1104
Ala Gly Val Leu Ala Glu Gly Ala Lys Thr Val Ala Tyr Ser Tyr Ile
        355                 360                 365

ggc ccc gag atg acg tgg cct gtc tac tgg tcc ggc acc atc ggg gag     1152
Gly Pro Glu Met Thr Trp Pro Val Tyr Trp Ser Gly Thr Ile Gly Glu
    370                 375                 380

gcc aag aag gac gtg gag aag gct gcc aag cgc atc acg cag cag tac     1200
Ala Lys Lys Asp Val Glu Lys Ala Ala Lys Arg Ile Thr Gln Gln Tyr
385                 390                 395                 400

ggc tgc ccg gcg tac ccg gtg gtg gcc aag gcc ttg gtc acc cag gcc     1248
Gly Cys Pro Ala Tyr Pro Val Val Ala Lys Ala Leu Val Thr Gln Ala
                405                 410                 415

agc tcc gcc atc ccg gtg gtg ccg ctc tac atc tgc ctg ctg tac cgc     1296
Ser Ser Ala Ile Pro Val Val Pro Leu Tyr Ile Cys Leu Leu Tyr Arg
            420                 425                 430

gtt atg aag gag aag ggc acc cac gag ggc tgc atc gag cag atg gtg     1344
Val Met Lys Glu Lys Gly Thr His Glu Gly Cys Ile Glu Gln Met Val
        435                 440                 445

cgg ctg ctc acc acg aag ctg tac ccc gag aac ggg gcc ccc atc gtc     1392
Arg Leu Leu Thr Thr Lys Leu Tyr Pro Glu Asn Gly Ala Pro Ile Val
    450                 455                 460

gat gag gcc gga cgt gtg cgg gtg gat gac tgg gag atg gcg gag gat     1440
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Asp Glu Ala Gly Arg Val Arg Val Asp Asp Trp Glu Met Ala Glu Asp
465                 470                 475                 480

gtg cag cag gct gtt aag gac ctc tgg agc cag gtg agc act gcc aac    1488
Val Gln Gln Ala Val Lys Asp Leu Trp Ser Gln Val Ser Thr Ala Asn
                485                 490                 495

ctc aag gac atc tcc gac ttc gct ggg tat caa act gag ttc ctg cgg    1536
Leu Lys Asp Ile Ser Asp Phe Ala Gly Tyr Gln Thr Glu Phe Leu Arg
            500                 505                 510

ctg ttc ggg ttc ggc att gac ggc gtg gac tac gac cag ccc gtg gac    1584
Leu Phe Gly Phe Gly Ile Asp Gly Val Asp Tyr Asp Gln Pro Val Asp
        515                 520                 525

gtg gag gcg gac ctc ccc agt gct gcc cag cag tag                   1620
Val Glu Ala Asp Leu Pro Ser Ala Ala Gln Gln
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<213> Euglena gracilis

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            20                  25                  30

Thr Ala Leu Ser Thr Ala Ser Thr Arg Ser Pro Thr Ser Leu Val Arg
        35                  40                  45

Gly Val Asp Arg Gly Leu Met Arg Pro Thr Thr Ala Ala Ala Leu Thr
    50                  55                  60

Thr Met Arg Glu Val Pro Gln Met Ala Glu Gly Phe Ser Gly Glu Ala
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Thr Ser Ala Trp Ala Ala Ala Gly Pro Gln Trp Ala Ala Pro Leu Val
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Ala Ala Ala Ser Ser Ala Leu Ala Leu Trp Trp Trp Ala Ala Arg Arg
            100                 105                 110

Ser Val Arg Arg Pro Leu Ala Ala Leu Ala Glu Leu Pro Thr Ala Val
        115                 120                 125

Thr His Leu Ala Pro Pro Met Ala Met Phe Thr Thr Thr Ala Lys Val
    130                 135                 140

Ile Gln Pro Lys Ile Arg Gly Phe Ile Cys Thr Thr Thr His Pro Ile
145                 150                 155                 160

Gly Cys Glu Lys Arg Val Gln Glu Glu Ile Ala Tyr Ala Arg Ala His
                165                 170                 175

Pro Pro Thr Ser Pro Gly Pro Lys Arg Val Leu Val Ile Gly Cys Ser
            180                 185                 190

Thr Gly Tyr Gly Leu Ser Thr Arg Ile Thr Ala Ala Phe Gly Tyr Gln
        195                 200                 205

Ala Ala Thr Leu Gly Val Phe Leu Ala Gly Pro Pro Thr Lys Gly Arg
    210                 215                 220

Pro Ala Ala Ala Gly Trp Tyr Asn Thr Val Ala Phe Glu Lys Ala Ala
225                 230                 235                 240

Leu Glu Ala Gly Leu Tyr Ala Arg Ser Leu Asn Gly Asp Ala Phe Asp
                245                 250                 255

Ser Thr Thr Lys Ala Arg Thr Val Glu Ala Ile Lys Arg Asp Leu Gly
            260                 265                 270

Thr Val Asp Leu Val Val Tyr Ser Ile Ala Ala Pro Lys Arg Thr Asp
        275                 280                 285

Pro Ala Thr Gly Val Leu His Lys Ala Cys Leu Lys Pro Ile Gly Ala
    290                 295                 300

Thr Tyr Thr Asn Arg Thr Val Asn Thr Asp Lys Ala Glu Val Thr Asp
305                 310                 315                 320
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Val Ser Ile Glu Pro Ala Ser Pro Glu Glu Ile Ala Asp Thr Val Lys
                325                 330                 335

Val Met Gly Gly Glu Asp Trp Glu Leu Trp Ile Gln Ala Leu Ser Glu
            340                 345                 350

Ala Gly Val Leu Ala Glu Gly Ala Lys Thr Val Ala Tyr Ser Tyr Ile
        355                 360                 365

Gly Pro Glu Met Thr Trp Pro Val Tyr Trp Ser Gly Thr Ile Gly Glu
    370                 375                 380

Ala Lys Lys Asp Val Glu Lys Ala Ala Lys Arg Ile Thr Gln Gln Tyr
385                 390                 395                 400

Gly Cys Pro Ala Tyr Pro Val Val Ala Lys Ala Leu Val Thr Gln Ala
                405                 410                 415

Ser Ser Ala Ile Pro Val Val Pro Leu Tyr Ile Cys Leu Leu Tyr Arg
            420                 425                 430

Val Met Lys Glu Lys Gly Thr His Glu Gly Cys Ile Glu Gln Met Val
        435                 440                 445

Arg Leu Leu Thr Thr Lys Leu Tyr Pro Glu Asn Gly Ala Pro Ile Val
    450                 455                 460

Asp Glu Ala Gly Arg Val Arg Val Asp Asp Trp Glu Met Ala Glu Asp
465                 470                 475                 480

Val Gln Gln Ala Val Lys Asp Leu Trp Ser Gln Val Ser Thr Ala Asn
                485                 490                 495

Leu Lys Asp Ile Ser Asp Phe Ala Gly Tyr Gln Thr Glu Phe Leu Arg
            500                 505                 510

Leu Phe Gly Phe Gly Ile Asp Gly Val Asp Tyr Asp Gln Pro Val Asp
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Val Glu Ala Asp Leu Pro Ser Ala Ala Gln Gln
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<213> Euglena gracilis

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cgggatctcg gcacggtgga cctcgtggtg tacagcatcg ccgccccgaa acggacggac 180

cctgccaccg gcgtcgtcca caaggcctgc ctgaagccca tcggcgccac ctacaccaac 240

cgcactgtga acaccgacaa ggcggaggtg accgatgtca gcatcgagcc ggcctccccc 300

gaggagatcg ccgacacggt gaaggtgatg ggcggggagg actgggagct ttggatccag 360

gcactgtcgg aggccggcgt gctggcggag ggggccaaga cggtggcata ctcctacatc 420

ggccccgaga tgacgtggcc cgtgtactgg tccggcacca ttggggaggc caagaaggac 480

gtggagaagg ccgctaagcg catcacacag cagtacggct gcccagcata cccggtggtg 540

gccaaggcct tggtcaccca ggccagctct gccatcccgg tggtgccgct ctacatctgc 600

ctgctgtacc gcgttatgaa ggagaagggc acccacgagg gctgcatcga gcagatggtg 660

cggctgctca ccacgaagct gtaccccggg aacggttccc ccattgtcga tgaggccggg 720

cgggtgcggg tggatgactg ggagatggcg gaggatgtgc agcaggctgt gaaggacctc 780

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Met Gly Arg Arg Gly Ala Ala Val Gly Gly Ala Ala Arg Gly Arg Gly
1               5                  10                  15

ctc ctc cgc act ggc gct gtg gtg gtg aac atc gcc acc gcg gtc acc        96
Leu Leu Arg Thr Gly Ala Val Val Val Asn Ile Ala Thr Ala Val Thr
            20                  25                  30

cac ctg gcc ccc ccg atg gcg atg ttc acc acc aca gcg aag gtc atc       144
His Leu Ala Pro Pro Met Ala Met Phe Thr Thr Thr Ala Lys Val Ile
        35                  40                  45

cag ccc aag att cgt ggc ttc atc tgc acg acc acc cac ccg atc ggc       192
Gln Pro Lys Ile Arg Gly Phe Ile Cys Thr Thr Thr His Pro Ile Gly
    50                  55                  60

tgt gag aag cgg gtc cag gag gag atc gcg tac gcc cgt gcc cac ccg       240
Cys Glu Lys Arg Val Gln Glu Glu Ile Ala Tyr Ala Arg Ala His Pro
65                  70                  75                  80

ccc acc agc cct ggc ccg aag agg gtg ctg gtc atc ggc tgc agt acc       288
Pro Thr Ser Pro Gly Pro Lys Arg Val Leu Val Ile Gly Cys Ser Thr
                85                  90                  95

ggc tac ggg ctc tcc acc cgc atc acc gct gcc ttc ggc tac cag gcc       336
Gly Tyr Gly Leu Ser Thr Arg Ile Thr Ala Ala Phe Gly Tyr Gln Ala
            100                 105                 110

gcc acg ctg ggc gtg ttc ctg gcg ggc ccc ccg acg aag ggc cgc ccc       384
Ala Thr Leu Gly Val Phe Leu Ala Gly Pro Pro Thr Lys Gly Arg Pro
        115                 120                 125

gcc gcg gcg ggc tgg tac aac acc gtg gcg ttc gag aag gcc gcc ctg       432
Ala Ala Ala Gly Trp Tyr Asn Thr Val Ala Phe Glu Lys Ala Ala Leu
    130                 135                 140

gag gcc ggg ctg tac gcc cgg agc ctt aat ggc gac gcc ttc gac tcc       480
Glu Ala Gly Leu Tyr Ala Arg Ser Leu Asn Gly Asp Ala Phe Asp Ser
145                 150                 155                 160

aca acg aag gcg cgg acg gtc gag gcg atc aag cgg gac ctc ggc acg       528
Thr Thr Lys Ala Arg Thr Val Glu Ala Ile Lys Arg Asp Leu Gly Thr
                165                 170                 175

gtg gac ctc gtg gtg tac agc atc gcc gcc ccg aag cgg acg gac cct       576
Val Asp Leu Val Val Tyr Ser Ile Ala Ala Pro Lys Arg Thr Asp Pro
            180                 185                 190

gcc acc ggc gtc ctc cac aag gcc tgc ctg aag ccc atc ggc gcc acg       624
Ala Thr Gly Val Leu His Lys Ala Cys Leu Lys Pro Ile Gly Ala Thr
        195                 200                 205
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tac acc aac cgc act gtg aac acc gac aag gcg gag gtg acc gac gtc      672
Tyr Thr Asn Arg Thr Val Asn Thr Asp Lys Ala Glu Val Thr Asp Val
    210                 215                 220

agc att gag ccg gcc tcc ccc gaa gag atc gcg gac acg gtg aag gtg      720
Ser Ile Glu Pro Ala Ser Pro Glu Glu Ile Ala Asp Thr Val Lys Val
225                 230                 235                 240

atg ggc ggg gag gac tgg gag ctc tgg atc cag gcg ctg tcg gag gcc      768
Met Gly Gly Glu Asp Trp Glu Leu Trp Ile Gln Ala Leu Ser Glu Ala
                245                 250                 255

ggc gtg ctg gcg gag ggg gcc aag acg gtg gcg tac tcc tac atc ggc      816
Gly Val Leu Ala Glu Gly Ala Lys Thr Val Ala Tyr Ser Tyr Ile Gly
            260                 265                 270

ccc gag atg acg tgg cct gtc tac tgg tcc ggc acc atc ggg gag gcc      864
Pro Glu Met Thr Trp Pro Val Tyr Trp Ser Gly Thr Ile Gly Glu Ala
        275                 280                 285

aag aag gac gtg gag aag gct gcc aag cgc atc acg cag cag tac ggc      912
Lys Lys Asp Val Glu Lys Ala Ala Lys Arg Ile Thr Gln Gln Tyr Gly
    290                 295                 300

tgc ccg gcg tac ccg gtg gtg gcc aag gcc ttg gtc acc cag gcc agc      960
Cys Pro Ala Tyr Pro Val Val Ala Lys Ala Leu Val Thr Gln Ala Ser
305                 310                 315                 320

tcc gcc atc ccg gtg gtg ccg ctc tac atc tgc ctg ctg tac cgc gtt     1008
Ser Ala Ile Pro Val Val Pro Leu Tyr Ile Cys Leu Leu Tyr Arg Val
                325                 330                 335

atg aag gag aag ggc acc cac gag ggc tgc atc gag cag atg gtg cgg     1056
Met Lys Glu Lys Gly Thr His Glu Gly Cys Ile Glu Gln Met Val Arg
            340                 345                 350

ctg ctc acc acg aag ctg tac ccc gag aac ggg gcc ccc atc gtc gat     1104
Leu Leu Thr Thr Lys Leu Tyr Pro Glu Asn Gly Ala Pro Ile Val Asp
        355                 360                 365

gag gcc gga cgt gtg cgg gtg gat gac tgg gag atg gcg gag gat gtg     1152
Glu Ala Gly Arg Val Arg Val Asp Asp Trp Glu Met Ala Glu Asp Val
    370                 375                 380

cag cag gct gtt aag gac ctc tgg agc cag gtg agc act gcc aac ctc     1200
Gln Gln Ala Val Lys Asp Leu Trp Ser Gln Val Ser Thr Ala Asn Leu
385                 390                 395                 400

aag gac atc tcc gac ttc gct ggg tat caa act gag ttc ctg cgg ctg     1248
Lys Asp Ile Ser Asp Phe Ala Gly Tyr Gln Thr Glu Phe Leu Arg Leu
                405                 410                 415

ttc ggg ttc ggc att gac ggc gtg gac tac gac cag ccc gtg gac gtg     1296
Phe Gly Phe Gly Ile Asp Gly Val Asp Tyr Asp Gln Pro Val Asp Val
            420                 425                 430
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<213> Euglena gracilis

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Leu Leu Arg Thr Gly Ala Val Val Val Asn Ile Ala Thr Ala Val Thr
20 25 30

His Leu Ala Pro Pro Met Ala Met Phe Thr Thr Thr Ala Lys Val Ile
35 40 45

Gln Pro Lys Ile Arg Gly Phe Ile Cys Thr Thr Thr His Pro Ile Gly
50 55 60

Cys Glu Lys Arg Val Gln Glu Glu Ile Ala Tyr Ala Arg Ala His Pro
65 70 75 80

Pro Thr Ser Pro Gly Pro Lys Arg Val Leu Val Ile Gly Cys Ser Thr
85 90 95

Gly Tyr Gly Leu Ser Thr Arg Ile Thr Ala Ala Phe Gly Tyr Gln Ala
100 105 110

Ala Thr Leu Gly Val Phe Leu Ala Gly Pro Pro Thr Lys Gly Arg Pro
115 120 125

Ala Ala Ala Gly Trp Tyr Asn Thr Val Ala Phe Glu Lys Ala Ala Leu
130 135 140

Glu Ala Gly Leu Tyr Ala Arg Ser Leu Asn Gly Asp Ala Phe Asp Ser
145 150 155 160

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Thr Thr Lys Ala Arg Thr Val Glu Ala Ile Lys Arg Asp Leu Gly Thr
                165                 170                 175

Val Asp Leu Val Val Tyr Ser Ile Ala Ala Pro Lys Arg Thr Asp Pro
            180                 185                 190

Ala Thr Gly Val Leu His Lys Ala Cys Leu Lys Pro Ile Gly Ala Thr
        195                 200                 205

Tyr Thr Asn Arg Thr Val Asn Thr Asp Lys Ala Glu Val Thr Asp Val
    210                 215                 220

Ser Ile Glu Pro Ala Ser Pro Glu Glu Ile Ala Asp Thr Val Lys Val
225                 230                 235                 240

Met Gly Gly Glu Asp Trp Glu Leu Trp Ile Gln Ala Leu Ser Glu Ala
                245                 250                 255

Gly Val Leu Ala Glu Gly Ala Lys Thr Val Ala Tyr Ser Tyr Ile Gly
            260                 265                 270

Pro Glu Met Thr Trp Pro Val Tyr Trp Ser Gly Thr Ile Gly Glu Ala
        275                 280                 285

Lys Lys Asp Val Glu Lys Ala Ala Lys Arg Ile Thr Gln Gln Tyr Gly
    290                 295                 300

Cys Pro Ala Tyr Pro Val Val Ala Lys Ala Leu Val Thr Gln Ala Ser
305                 310                 315                 320

Ser Ala Ile Pro Val Val Pro Leu Tyr Ile Cys Leu Leu Tyr Arg Val
                325                 330                 335

Met Lys Glu Lys Gly Thr His Glu Gly Cys Ile Glu Gln Met Val Arg
            340                 345                 350

Leu Leu Thr Thr Lys Leu Tyr Pro Glu Asn Gly Ala Pro Ile Val Asp
        355                 360                 365

Glu Ala Gly Arg Val Arg Val Asp Asp Trp Glu Met Ala Glu Asp Val
    370                 375                 380
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Gln Gln Ala Val Lys Asp Leu Trp Ser Gln Val Ser Thr Ala Asn Leu
385 390 395 400

Lys Asp Ile Ser Asp Phe Ala Gly Tyr Gln Thr Glu Phe Leu Arg Leu
405 410 415

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Glu Ala Asp Leu Pro Ser Ala Ala Gln Gln
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atc tgc acg acc acc cac ccg atc ggc tgt gag aag cgg gtc cag gag 96
Ile Cys Thr Thr Thr His Pro Ile Gly Cys Glu Lys Arg Val Gln Glu
20 25 30

gag atc gcg tac gcc cgt gcc cac ccg ccc acc agc cct ggc ccg aag 144
Glu Ile Ala Tyr Ala Arg Ala His Pro Pro Thr Ser Pro Gly Pro Lys
35 40 45

agg gtg ctg gtc atc ggc tgc agt acc ggc tac ggg ctc tcc acc cgc 192
Arg Val Leu Val Ile Gly Cys Ser Thr Gly Tyr Gly Leu Ser Thr Arg
50 55 60

atc acc gct gcc ttc ggc tac cag gcc gcc acg ctg ggc gtg ttc ctg 240

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Ile Thr Ala Ala Phe Gly Tyr Gln Ala Ala Thr Leu Gly Val Phe Leu
65                  70                  75                  80

gcg ggc ccc ccg acg aag ggc cgc ccc gcc gcg gcg ggc tgg tac aac      288
Ala Gly Pro Pro Thr Lys Gly Arg Pro Ala Ala Ala Gly Trp Tyr Asn
                85                  90                  95

acc gtg gcg ttc gag aag gcc gcc ctg gag gcc ggg ctg tac gcc cgg      336
Thr Val Ala Phe Glu Lys Ala Ala Leu Glu Ala Gly Leu Tyr Ala Arg
            100                 105                 110

agc ctt aat ggc gac gcc ttc gac tcc aca acg aag gcg cgg acg gtc      384
Ser Leu Asn Gly Asp Ala Phe Asp Ser Thr Thr Lys Ala Arg Thr Val
        115                 120                 125

gag gcg atc aag cgg gac ctc ggc acg gtg gac ctc gtg gtg tac agc      432
Glu Ala Ile Lys Arg Asp Leu Gly Thr Val Asp Leu Val Val Tyr Ser
    130                 135                 140

atc gcc gcc ccg aag cgg acg gac cct gcc acc ggc gtc ctc cac aag      480
Ile Ala Ala Pro Lys Arg Thr Asp Pro Ala Thr Gly Val Leu His Lys
145                 150                 155                 160

gcc tgc ctg aag ccc atc ggc gcc acg tac acc aac cgc act gtg aac      528
Ala Cys Leu Lys Pro Ile Gly Ala Thr Tyr Thr Asn Arg Thr Val Asn
                165                 170                 175

acc gac aag gcg gag gtg acc gac gtc agc att gag ccg gcc tcc ccc      576
Thr Asp Lys Ala Glu Val Thr Asp Val Ser Ile Glu Pro Ala Ser Pro
            180                 185                 190

gaa gag atc gcg gac acg gtg aag gtg atg ggc ggg gag gac tgg gag      624
Glu Glu Ile Ala Asp Thr Val Lys Val Met Gly Gly Glu Asp Trp Glu
        195                 200                 205

ctc tgg atc cag gcg ctg tcg gag gcc ggc gtg ctg gcg gag ggg gcc      672
Leu Trp Ile Gln Ala Leu Ser Glu Ala Gly Val Leu Ala Glu Gly Ala
    210                 215                 220

aag acg gtg gcg tac tcc tac atc ggc ccc gag atg acg tgg cct gtc      720
Lys Thr Val Ala Tyr Ser Tyr Ile Gly Pro Glu Met Thr Trp Pro Val
225                 230                 235                 240

tac tgg tcc ggc acc atc ggg gag gcc aag aag gac gtg gag aag gct      768
Tyr Trp Ser Gly Thr Ile Gly Glu Ala Lys Lys Asp Val Glu Lys Ala
                245                 250                 255

gcc aag cgc atc acg cag cag tac ggc tgc ccg gcg tac ccg gtg gtg      816
Ala Lys Arg Ile Thr Gln Gln Tyr Gly Cys Pro Ala Tyr Pro Val Val
            260                 265                 270

gcc aag gcc ttg gtc acc cag gcc agc tcc gcc atc ccg gtg gtg ccg      864
Ala Lys Ala Leu Val Thr Gln Ala Ser Ser Ala Ile Pro Val Val Pro
        275                 280                 285

ctc tac atc tgc ctg ctg tac cgc gtt atg aag gag aag ggc acc cac      912
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Leu Tyr Ile Cys Leu Leu Tyr Arg Val Met Lys Glu Lys Gly Thr His
    290                 295                 300

gag ggc tgc atc gag cag atg gtg cgg ctg ctc acc acg aag ctg tac     960
Glu Gly Cys Ile Glu Gln Met Val Arg Leu Leu Thr Thr Lys Leu Tyr
305                 310                 315                 320

ccc gag aac ggg gcc ccc atc gtc gat gag gcc gga cgt gtg cgg gtg     1008
Pro Glu Asn Gly Ala Pro Ile Val Asp Glu Ala Gly Arg Val Arg Val
                325                 330                 335

gat gac tgg gag atg gcg gag gat gtg cag cag gct gtt aag gac ctc     1056
Asp Asp Trp Glu Met Ala Glu Asp Val Gln Gln Ala Val Lys Asp Leu
            340                 345                 350

tgg agc cag gtg agc act gcc aac ctc aag gac atc tcc gac ttc gct     1104
Trp Ser Gln Val Ser Thr Ala Asn Leu Lys Asp Ile Ser Asp Phe Ala
        355                 360                 365

ggg tat caa act gag ttc ctg cgg ctg ttc ggg ttc ggc att gac ggc     1152
Gly Tyr Gln Thr Glu Phe Leu Arg Leu Phe Gly Phe Gly Ile Asp Gly
    370                 375                 380

gtg gac tac gac cag ccc gtg gac gtg gag gcg gac ctc ccc agt gct     1200
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385                 390                 395                 400

gcc cag cag tag                                                     1212
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<210> 7

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Met Phe Thr Thr Thr Ala Lys Val Ile Gln Pro Lys Ile Arg Gly Phe
1               5                   10                  15

Ile Cys Thr Thr Thr His Pro Ile Gly Cys Glu Lys Arg Val Gln Glu
            20                  25                  30

Glu Ile Ala Tyr Ala Arg Ala His Pro Pro Thr Ser Pro Gly Pro Lys
        35                  40                  45
```

```
Arg Val Leu Val Ile Gly Cys Ser Thr Gly Tyr Gly Leu Ser Thr Arg
    50                  55                  60

Ile Thr Ala Ala Phe Gly Tyr Gln Ala Ala Thr Leu Gly Val Phe Leu
65                  70                  75                  80

Ala Gly Pro Pro Thr Lys Gly Arg Pro Ala Ala Ala Gly Trp Tyr Asn
                85                  90                  95

Thr Val Ala Phe Glu Lys Ala Ala Leu Glu Ala Gly Leu Tyr Ala Arg
            100                 105                 110

Ser Leu Asn Gly Asp Ala Phe Asp Ser Thr Thr Lys Ala Arg Thr Val
        115                 120                 125

Glu Ala Ile Lys Arg Asp Leu Gly Thr Val Asp Leu Val Val Tyr Ser
    130                 135                 140

Ile Ala Ala Pro Lys Arg Thr Asp Pro Ala Thr Gly Val Leu His Lys
145                 150                 155                 160

Ala Cys Leu Lys Pro Ile Gly Ala Thr Tyr Thr Asn Arg Thr Val Asn
                165                 170                 175

Thr Asp Lys Ala Glu Val Thr Asp Val Ser Ile Glu Pro Ala Ser Pro
            180                 185                 190

Glu Glu Ile Ala Asp Thr Val Lys Val Met Gly Gly Glu Asp Trp Glu
        195                 200                 205

Leu Trp Ile Gln Ala Leu Ser Glu Ala Gly Val Leu Ala Glu Gly Ala
    210                 215                 220

Lys Thr Val Ala Tyr Ser Tyr Ile Gly Pro Glu Met Thr Trp Pro Val
225                 230                 235                 240

Tyr Trp Ser Gly Thr Ile Gly Glu Ala Lys Lys Asp Val Glu Lys Ala
                245                 250                 255

Ala Lys Arg Ile Thr Gln Gln Tyr Gly Cys Pro Ala Tyr Pro Val Val
            260                 265                 270
```

Ala Lys Ala Leu Val Thr Gln Ala Ser Ser Ala Ile Pro Val Val Pro
275 280 285

Leu Tyr Ile Cys Leu Leu Tyr Arg Val Met Lys Glu Lys Gly Thr His
290 295 300

Glu Gly Cys Ile Glu Gln Met Val Arg Leu Leu Thr Thr Lys Leu Tyr
305 310 315 320

Pro Glu Asn Gly Ala Pro Ile Val Asp Glu Ala Gly Arg Val Arg Val
325 330 335

Asp Asp Trp Glu Met Ala Glu Asp Val Gln Gln Ala Val Lys Asp Leu
340 345 350

Trp Ser Gln Val Ser Thr Ala Asn Leu Lys Asp Ile Ser Asp Phe Ala
355 360 365

Gly Tyr Gln Thr Glu Phe Leu Arg Leu Phe Gly Phe Gly Ile Asp Gly
370 375 380

Val Asp Tyr Asp Gln Pro Val Asp Val Glu Ala Asp Leu Pro Ser Ala
385 390 395 400

Ala Gln Gln

<210> 8

<211> 1803

<212> DNA

<213> Euglena gracilis

<220>

<221> CDS

<222> (1)..(1803)

<223>

<400> 8

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atg gct tct atg ata tcc tct tca gct gtg act aca gtc agc cgt gct       48
Met Ala Ser Met Ile Ser Ser Ser Ala Val Thr Thr Val Ser Arg Ala
1               5                  10                  15

tct acg gtg caa tcg gcc gcg gtg gct cca ttc ggc ggc ctc aaa tcc       96
Ser Thr Val Gln Ser Ala Ala Val Ala Pro Phe Gly Gly Leu Lys Ser
            20                  25                  30

atg act gga ttc cca gtt aag aag gtc aac act gac att act tcc att      144
Met Thr Gly Phe Pro Val Lys Lys Val Asn Thr Asp Ile Thr Ser Ile
        35                  40                  45

aca agc aat ggt gga aga gta aag tat tta aat ctc gag atg tcg tgc      192
Thr Ser Asn Gly Gly Arg Val Lys Tyr Leu Asn Leu Glu Met Ser Cys
    50                  55                  60

ccc gcc tcg ccg tct gct gcc gtg gtg tct gcc ggc gcc ctc tgc ctg      240
Pro Ala Ser Pro Ser Ala Ala Val Val Ser Ala Gly Ala Leu Cys Leu
65                  70                  75                  80

tgc gtg gca acg gta ttg ttg gcg act gga tcc aac ccc acc gcc ctg      288
Cys Val Ala Thr Val Leu Leu Ala Thr Gly Ser Asn Pro Thr Ala Leu
                85                  90                  95

tcc act gct tcc act cgc tct ccg acc tca ctg gtc cgt ggg gtg gac      336
Ser Thr Ala Ser Thr Arg Ser Pro Thr Ser Leu Val Arg Gly Val Asp
            100                 105                 110

agg ggc ttg atg agg cca acc act gca gcg gct ctg acg aca atg aga      384
Arg Gly Leu Met Arg Pro Thr Thr Ala Ala Ala Leu Thr Thr Met Arg
        115                 120                 125

gag gtg ccc cag atg gct gag gga ttt tca ggc gaa gcc acg tct gca      432
Glu Val Pro Gln Met Ala Glu Gly Phe Ser Gly Glu Ala Thr Ser Ala
    130                 135                 140

tgg gcc gcc gcg ggg ccg cag tgg gcg gcg ccg ctc gtg gcc gcg gcc      480
Trp Ala Ala Ala Gly Pro Gln Trp Ala Ala Pro Leu Val Ala Ala Ala
145                 150                 155                 160

tcc tcc gca ctg gcg ctg tgg tgg tgg gcc gcc cgg cgc agc gtg cgg      528
Ser Ser Ala Leu Ala Leu Trp Trp Trp Ala Ala Arg Arg Ser Val Arg
                165                 170                 175

cgg ccg ctg gca gcg ctg gcg gag ctg ccc acc gcg gtc acc cac ctg      576
Arg Pro Leu Ala Ala Leu Ala Glu Leu Pro Thr Ala Val Thr His Leu
            180                 185                 190

gcc ccc ccg atg gcg atg ttc acc acc aca gcg aag gtc atc cag ccc      624
Ala Pro Pro Met Ala Met Phe Thr Thr Thr Ala Lys Val Ile Gln Pro
        195                 200                 205

aag att cgt ggc ttc atc tgc acg acc acc cac ccg atc ggc tgt gag      672
Lys Ile Arg Gly Phe Ile Cys Thr Thr Thr His Pro Ile Gly Cys Glu
    210                 215                 220
```

```
aag cgg gtc cag gag gag atc gcg tac gcc cgt gcc cac ccg ccc acc      720
Lys Arg Val Gln Glu Glu Ile Ala Tyr Ala Arg Ala His Pro Pro Thr
225                 230                 235                 240

agc cct ggc ccg aag agg gtg ctg gtc atc ggc tgc agt acc ggc tac      768
Ser Pro Gly Pro Lys Arg Val Leu Val Ile Gly Cys Ser Thr Gly Tyr
                245                 250                 255

ggg ctc tcc acc cgc atc acc gct gcc ttc ggc tac cag gcc gcc acg      816
Gly Leu Ser Thr Arg Ile Thr Ala Ala Phe Gly Tyr Gln Ala Ala Thr
            260                 265                 270

ctg ggc gtg ttc ctg gcg ggc ccc ccg acg aag ggc cgc ccc gcc gcg      864
Leu Gly Val Phe Leu Ala Gly Pro Pro Thr Lys Gly Arg Pro Ala Ala
        275                 280                 285

gcg ggc tgg tac aac acc gtg gcg ttc gag aag gcc gcc ctg gag gcc      912
Ala Gly Trp Tyr Asn Thr Val Ala Phe Glu Lys Ala Ala Leu Glu Ala
    290                 295                 300

ggg ctg tac gcc cgg agc ctt aat ggc gac gcc ttc gac tcc aca acg      960
Gly Leu Tyr Ala Arg Ser Leu Asn Gly Asp Ala Phe Asp Ser Thr Thr
305                 310                 315                 320

aag gcg cgg acg gtc gag gcg atc aag cgg gac ctc ggc acg gtg gac     1008
Lys Ala Arg Thr Val Glu Ala Ile Lys Arg Asp Leu Gly Thr Val Asp
                325                 330                 335

ctc gtg gtg tac agc atc gcc gcc ccg aag cgg acg gac cct gcc acc     1056
Leu Val Val Tyr Ser Ile Ala Ala Pro Lys Arg Thr Asp Pro Ala Thr
            340                 345                 350

ggc gtc ctc cac aag gcc tgc ctg aag ccc atc ggc gcc acg tac acc     1104
Gly Val Leu His Lys Ala Cys Leu Lys Pro Ile Gly Ala Thr Tyr Thr
        355                 360                 365

aac cgc act gtg aac acc gac aag gcg gag gtg acc gac gtc agc att     1152
Asn Arg Thr Val Asn Thr Asp Lys Ala Glu Val Thr Asp Val Ser Ile
    370                 375                 380

gag ccg gcc tcc ccc gaa gag atc gcg gac acg gtg aag gtg atg ggc     1200
Glu Pro Ala Ser Pro Glu Glu Ile Ala Asp Thr Val Lys Val Met Gly
385                 390                 395                 400

ggg gag gac tgg gag ctc tgg atc cag gcg ctg tcg gag gcc ggc gtg     1248
Gly Glu Asp Trp Glu Leu Trp Ile Gln Ala Leu Ser Glu Ala Gly Val
                405                 410                 415

ctg gcg gag ggg gcc aag acg gtg gcg tac tcc tac atc ggc ccc gag     1296
Leu Ala Glu Gly Ala Lys Thr Val Ala Tyr Ser Tyr Ile Gly Pro Glu
            420                 425                 430

atg acg tgg cct gtc tac tgg tcc ggc acc atc ggg gag gcc aag aag     1344
Met Thr Trp Pro Val Tyr Trp Ser Gly Thr Ile Gly Glu Ala Lys Lys
        435                 440                 445
```

```
gac gtg gag aag gct gcc aag cgc atc acg cag cag tac ggc tgc ccg      1392
Asp Val Glu Lys Ala Ala Lys Arg Ile Thr Gln Gln Tyr Gly Cys Pro
    450                 455                 460

gcg tac ccg gtg gtg gcc aag gcc ttg gtc acc cag gcc agc tcc gcc      1440
Ala Tyr Pro Val Val Ala Lys Ala Leu Val Thr Gln Ala Ser Ser Ala
465                 470                 475                 480

atc ccg gtg gtg ccg ctc tac atc tgc ctg ctg tac cgc gtt atg aag      1488
Ile Pro Val Val Pro Leu Tyr Ile Cys Leu Leu Tyr Arg Val Met Lys
                485                 490                 495

gag aag ggc acc cac gag ggc tgc atc gag cag atg gtg cgg ctg ctc      1536
Glu Lys Gly Thr His Glu Gly Cys Ile Glu Gln Met Val Arg Leu Leu
            500                 505                 510

acc acg aag ctg tac ccc gag aac ggg gcc ccc atc gtc gat gag gcc      1584
Thr Thr Lys Leu Tyr Pro Glu Asn Gly Ala Pro Ile Val Asp Glu Ala
        515                 520                 525

gga cgt gtg cgg gtg gat gac tgg gag atg gcg gag gat gtg cag cag      1632
Gly Arg Val Arg Val Asp Asp Trp Glu Met Ala Glu Asp Val Gln Gln
    530                 535                 540

gct gtt aag gac ctc tgg agc cag gtg agc act gcc aac ctc aag gac      1680
Ala Val Lys Asp Leu Trp Ser Gln Val Ser Thr Ala Asn Leu Lys Asp
545                 550                 555                 560

atc tcc gac ttc gct ggg tat caa act gag ttc ctg cgg ctg ttc ggg      1728
Ile Ser Asp Phe Ala Gly Tyr Gln Thr Glu Phe Leu Arg Leu Phe Gly
                565                 570                 575

ttc ggc att gac ggc gtg gac tac gac cag ccc gtg gac gtg gag gcg      1776
Phe Gly Ile Asp Gly Val Asp Tyr Asp Gln Pro Val Asp Val Glu Ala
            580                 585                 590

gac ctc ccc agt gct gcc cag cag tag                                 1803
Asp Leu Pro Ser Ala Ala Gln Gln
        595                 600
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<210> 9

<211> 600

<212> PRT

<213> Euglena gracilis

<400> 9

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Met Ala Ser Met Ile Ser Ser Ser Ala Val Thr Thr Val Ser Arg Ala
1               5                   10                  15
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Ser Thr Val Gln Ser Ala Ala Val Ala Pro Phe Gly Gly Leu Lys Ser
20 25 30

Met Thr Gly Phe Pro Val Lys Lys Val Asn Thr Asp Ile Thr Ser Ile
35 40 45

Thr Ser Asn Gly Gly Arg Val Lys Tyr Leu Asn Leu Glu Met Ser Cys
50 55 60

Pro Ala Ser Pro Ser Ala Ala Val Val Ser Ala Gly Ala Leu Cys Leu
65 70 75 80

Cys Val Ala Thr Val Leu Leu Ala Thr Gly Ser Asn Pro Thr Ala Leu
85 90 95

Ser Thr Ala Ser Thr Arg Ser Pro Thr Ser Leu Val Arg Gly Val Asp
100 105 110

Arg Gly Leu Met Arg Pro Thr Thr Ala Ala Ala Leu Thr Thr Met Arg
115 120 125

Glu Val Pro Gln Met Ala Glu Gly Phe Ser Gly Glu Ala Thr Ser Ala
130 135 140

Trp Ala Ala Ala Gly Pro Gln Trp Ala Ala Pro Leu Val Ala Ala Ala
145 150 155 160

Ser Ser Ala Leu Ala Leu Trp Trp Trp Ala Ala Arg Arg Ser Val Arg
165 170 175

Arg Pro Leu Ala Ala Leu Ala Glu Leu Pro Thr Ala Val Thr His Leu
180 185 190

Ala Pro Pro Met Ala Met Phe Thr Thr Thr Ala Lys Val Ile Gln Pro
195 200 205

Lys Ile Arg Gly Phe Ile Cys Thr Thr Thr His Pro Ile Gly Cys Glu
210 215 220

Lys Arg Val Gln Glu Glu Ile Ala Tyr Ala Arg Ala His Pro Pro Thr
225 230 235 240

```
Ser Pro Gly Pro Lys Arg Val Leu Val Ile Gly Cys Ser Thr Gly Tyr
                245                 250                 255

Gly Leu Ser Thr Arg Ile Thr Ala Ala Phe Gly Tyr Gln Ala Ala Thr
            260                 265                 270

Leu Gly Val Phe Leu Ala Gly Pro Pro Thr Lys Gly Arg Pro Ala Ala
        275                 280                 285

Ala Gly Trp Tyr Asn Thr Val Ala Phe Glu Lys Ala Ala Leu Glu Ala
    290                 295                 300

Gly Leu Tyr Ala Arg Ser Leu Asn Gly Asp Ala Phe Asp Ser Thr Thr
305                 310                 315                 320

Lys Ala Arg Thr Val Glu Ala Ile Lys Arg Asp Leu Gly Thr Val Asp
                325                 330                 335

Leu Val Val Tyr Ser Ile Ala Ala Pro Lys Arg Thr Asp Pro Ala Thr
            340                 345                 350

Gly Val Leu His Lys Ala Cys Leu Lys Pro Ile Gly Ala Thr Tyr Thr
        355                 360                 365

Asn Arg Thr Val Asn Thr Asp Lys Ala Glu Val Thr Asp Val Ser Ile
    370                 375                 380

Glu Pro Ala Ser Pro Glu Glu Ile Ala Asp Thr Val Lys Val Met Gly
385                 390                 395                 400

Gly Glu Asp Trp Glu Leu Trp Ile Gln Ala Leu Ser Glu Ala Gly Val
                405                 410                 415

Leu Ala Glu Gly Ala Lys Thr Val Ala Tyr Ser Tyr Ile Gly Pro Glu
            420                 425                 430

Met Thr Trp Pro Val Tyr Trp Ser Gly Thr Ile Gly Glu Ala Lys Lys
        435                 440                 445

Asp Val Glu Lys Ala Ala Lys Arg Ile Thr Gln Gln Tyr Gly Cys Pro
    450                 455                 460
```

Ala Tyr Pro Val Val Ala Lys Ala Leu Val Thr Gln Ala Ser Ser Ala
465 470 475 480

Ile Pro Val Val Pro Leu Tyr Ile Cys Leu Leu Tyr Arg Val Met Lys
485 490 495

Glu Lys Gly Thr His Glu Gly Cys Ile Glu Gln Met Val Arg Leu Leu
500 505 510

Thr Thr Lys Leu Tyr Pro Glu Asn Gly Ala Pro Ile Val Asp Glu Ala
515 520 525

Gly Arg Val Arg Val Asp Asp Trp Glu Met Ala Glu Asp Val Gln Gln
530 535 540

Ala Val Lys Asp Leu Trp Ser Gln Val Ser Thr Ala Asn Leu Lys Asp
545 550 555 560

Ile Ser Asp Phe Ala Gly Tyr Gln Thr Glu Phe Leu Arg Leu Phe Gly
565 570 575

Phe Gly Ile Asp Gly Val Asp Tyr Asp Gln Pro Val Asp Val Glu Ala
580 585 590

Asp Leu Pro Ser Ala Ala Gln Gln
595 600

<210> 10

<211> 1389

<212> DNA

<213> Euglena gracilis

<220>

<221> CDS

<222> (1)..(1389)

<223>

<400> 10

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atg gct tct atg ata tcc tct tca gct gtg act aca gtc agc cgt gct       48
Met Ala Ser Met Ile Ser Ser Ser Ala Val Thr Thr Val Ser Arg Ala
1               5                   10                  15

tct acg gtg caa tcg gcc gcg gtg gct cca ttc ggc ggc ctc aaa tcc       96
Ser Thr Val Gln Ser Ala Ala Val Ala Pro Phe Gly Gly Leu Lys Ser
            20                  25                  30

atg act gga ttc cca gtt aag aag gtc aac act gac att act tcc att      144
Met Thr Gly Phe Pro Val Lys Lys Val Asn Thr Asp Ile Thr Ser Ile
        35                  40                  45

aca agc aat ggt gga aga gta aag tat tta aat atg ttc acc acc aca      192
Thr Ser Asn Gly Gly Arg Val Lys Tyr Leu Asn Met Phe Thr Thr Thr
    50                  55                  60

gcg aag gtc atc cag ccc aag att cgt ggc ttc atc tgc acg acc acc      240
Ala Lys Val Ile Gln Pro Lys Ile Arg Gly Phe Ile Cys Thr Thr Thr
65                  70                  75                  80

cac ccg atc ggc tgt gag aag cgg gtc cag gag gag atc gcg tac gcc      288
His Pro Ile Gly Cys Glu Lys Arg Val Gln Glu Glu Ile Ala Tyr Ala
                85                  90                  95

cgt gcc cac ccg ccc acc agc cct ggc ccg aag agg gtg ctg gtc atc      336
Arg Ala His Pro Pro Thr Ser Pro Gly Pro Lys Arg Val Leu Val Ile
            100                 105                 110

ggc tgc agt acc ggc tac ggg ctc tcc acc cgc atc acc gct gcc ttc      384
Gly Cys Ser Thr Gly Tyr Gly Leu Ser Thr Arg Ile Thr Ala Ala Phe
        115                 120                 125

ggc tac cag gcc gcc acg ctg ggc gtg ttc ctg gcg ggc ccc ccg acg      432
Gly Tyr Gln Ala Ala Thr Leu Gly Val Phe Leu Ala Gly Pro Pro Thr
    130                 135                 140

aag ggc cgc ccc gcc gcg gcg ggc tgg tac aac acc gtg gcg ttc gag      480
Lys Gly Arg Pro Ala Ala Ala Gly Trp Tyr Asn Thr Val Ala Phe Glu
145                 150                 155                 160

aag gcc gcc ctg gag gcc ggg ctg tac gcc cgg agc ctt aat ggc gac      528
Lys Ala Ala Leu Glu Ala Gly Leu Tyr Ala Arg Ser Leu Asn Gly Asp
                165                 170                 175

gcc ttc gac tcc aca acg aag gcg cgg acg gtc gag gcg atc aag cgg      576
Ala Phe Asp Ser Thr Thr Lys Ala Arg Thr Val Glu Ala Ile Lys Arg
            180                 185                 190

gac ctc ggc acg gtg gac ctc gtg gtg tac agc atc gcc gcc ccg aag      624
Asp Leu Gly Thr Val Asp Leu Val Val Tyr Ser Ile Ala Ala Pro Lys
        195                 200                 205

cgg acg gac cct gcc acc ggc gtc ctc cac aag gcc tgc ctg aag ccc      672
```

```
Arg Thr Asp Pro Ala Thr Gly Val Leu His Lys Ala Cys Leu Lys Pro
    210                 215                 220

atc ggc gcc acg tac acc aac cgc act gtg aac acc gac aag gcg gag      720
Ile Gly Ala Thr Tyr Thr Asn Arg Thr Val Asn Thr Asp Lys Ala Glu
225                 230                 235                 240

gtg acc gac gtc agc att gag ccg gcc tcc ccc gaa gag atc gcg gac      768
Val Thr Asp Val Ser Ile Glu Pro Ala Ser Pro Glu Glu Ile Ala Asp
                245                 250                 255

acg gtg aag gtg atg ggc ggg gag gac tgg gag ctc tgg atc cag gcg      816
Thr Val Lys Val Met Gly Gly Glu Asp Trp Glu Leu Trp Ile Gln Ala
            260                 265                 270

ctg tcg gag gcc ggc gtg ctg gcg gag ggg gcc aag acg gtg gcg tac      864
Leu Ser Glu Ala Gly Val Leu Ala Glu Gly Ala Lys Thr Val Ala Tyr
        275                 280                 285

tcc tac atc ggc ccc gag atg acg tgg cct gtc tac tgg tcc ggc acc      912
Ser Tyr Ile Gly Pro Glu Met Thr Trp Pro Val Tyr Trp Ser Gly Thr
    290                 295                 300

atc ggg gag gcc aag aag gac gtg gag aag gct gcc aag cgc atc acg      960
Ile Gly Glu Ala Lys Lys Asp Val Glu Lys Ala Ala Lys Arg Ile Thr
305                 310                 315                 320

cag cag tac ggc tgc ccg gcg tac ccg gtg gtg gcc aag gcc ttg gtc     1008
Gln Gln Tyr Gly Cys Pro Ala Tyr Pro Val Val Ala Lys Ala Leu Val
                325                 330                 335

acc cag gcc agc tcc gcc atc ccg gtg gtg ccg ctc tac atc tgc ctg     1056
Thr Gln Ala Ser Ser Ala Ile Pro Val Val Pro Leu Tyr Ile Cys Leu
            340                 345                 350

ctg tac cgc gtt atg aag gag aag ggc acc cac gag ggc tgc atc gag     1104
Leu Tyr Arg Val Met Lys Glu Lys Gly Thr His Glu Gly Cys Ile Glu
        355                 360                 365

cag atg gtg cgg ctg ctc acc acg aag ctg tac ccc gag aac ggg gcc     1152
Gln Met Val Arg Leu Leu Thr Thr Lys Leu Tyr Pro Glu Asn Gly Ala
    370                 375                 380

ccc atc gtc gat gag gcc gga cgt gtg cgg gtg gat gac tgg gag atg     1200
Pro Ile Val Asp Glu Ala Gly Arg Val Arg Val Asp Asp Trp Glu Met
385                 390                 395                 400

gcg gag gat gtg cag cag gct gtt aag gac ctc tgg agc cag gtg agc     1248
Ala Glu Asp Val Gln Gln Ala Val Lys Asp Leu Trp Ser Gln Val Ser
                405                 410                 415

act gcc aac ctc aag gac atc tcc gac ttc gct ggg tat caa act gag     1296
Thr Ala Asn Leu Lys Asp Ile Ser Asp Phe Ala Gly Tyr Gln Thr Glu
            420                 425                 430

ttc ctg cgg ctg ttc ggg ttc ggc att gac ggc gtg gac tac gac cag     1344
```

```
Phe Leu Arg Leu Phe Gly Phe Gly Ile Asp Gly Val Asp Tyr Asp Gln
        435                 440                 445

ccc gtg gac gtg gag gcg gac ctc ccc agt gct gcc cag cag tag        1389
Pro Val Asp Val Glu Ala Asp Leu Pro Ser Ala Ala Gln Gln
    450                 455                 460
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<210> 11

<211> 462

<212> PRT

<213> Euglena gracilis

<400> 11

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Met Ala Ser Met Ile Ser Ser Ser Ala Val Thr Thr Val Ser Arg Ala
1               5                   10                  15

Ser Thr Val Gln Ser Ala Ala Val Ala Pro Phe Gly Gly Leu Lys Ser
            20                  25                  30

Met Thr Gly Phe Pro Val Lys Lys Val Asn Thr Asp Ile Thr Ser Ile
        35                  40                  45

Thr Ser Asn Gly Gly Arg Val Lys Tyr Leu Asn Met Phe Thr Thr Thr
    50                  55                  60

Ala Lys Val Ile Gln Pro Lys Ile Arg Gly Phe Ile Cys Thr Thr Thr
65                  70                  75                  80

His Pro Ile Gly Cys Glu Lys Arg Val Gln Glu Glu Ile Ala Tyr Ala
                85                  90                  95

Arg Ala His Pro Pro Thr Ser Pro Gly Pro Lys Arg Val Leu Val Ile
            100                 105                 110

Gly Cys Ser Thr Gly Tyr Gly Leu Ser Thr Arg Ile Thr Ala Ala Phe
        115                 120                 125

Gly Tyr Gln Ala Ala Thr Leu Gly Val Phe Leu Ala Gly Pro Pro Thr
    130                 135                 140
```

```
Lys Gly Arg Pro Ala Ala Ala Gly Trp Tyr Asn Thr Val Ala Phe Glu
145                 150                 155                 160

Lys Ala Ala Leu Glu Ala Gly Leu Tyr Ala Arg Ser Leu Asn Gly Asp
                165                 170                 175

Ala Phe Asp Ser Thr Thr Lys Ala Arg Thr Val Glu Ala Ile Lys Arg
            180                 185                 190

Asp Leu Gly Thr Val Asp Leu Val Val Tyr Ser Ile Ala Ala Pro Lys
        195                 200                 205

Arg Thr Asp Pro Ala Thr Gly Val Leu His Lys Ala Cys Leu Lys Pro
    210                 215                 220

Ile Gly Ala Thr Tyr Thr Asn Arg Thr Val Asn Thr Asp Lys Ala Glu
225                 230                 235                 240

Val Thr Asp Val Ser Ile Glu Pro Ala Ser Pro Glu Glu Ile Ala Asp
                245                 250                 255

Thr Val Lys Val Met Gly Gly Glu Asp Trp Glu Leu Trp Ile Gln Ala
            260                 265                 270

Leu Ser Glu Ala Gly Val Leu Ala Glu Gly Ala Lys Thr Val Ala Tyr
        275                 280                 285

Ser Tyr Ile Gly Pro Glu Met Thr Trp Pro Val Tyr Trp Ser Gly Thr
    290                 295                 300

Ile Gly Glu Ala Lys Lys Asp Val Glu Lys Ala Ala Lys Arg Ile Thr
305                 310                 315                 320

Gln Gln Tyr Gly Cys Pro Ala Tyr Pro Val Val Ala Lys Ala Leu Val
                325                 330                 335

Thr Gln Ala Ser Ser Ala Ile Pro Val Val Pro Leu Tyr Ile Cys Leu
            340                 345                 350

Leu Tyr Arg Val Met Lys Glu Lys Gly Thr His Glu Gly Cys Ile Glu
        355                 360                 365
```

```
Gln Met Val Arg Leu Leu Thr Thr Lys Leu Tyr Pro Glu Asn Gly Ala
    370                 375                 380

Pro Ile Val Asp Glu Ala Gly Arg Val Arg Val Asp Asp Trp Glu Met
385                 390                 395                 400

Ala Glu Asp Val Gln Gln Ala Val Lys Asp Leu Trp Ser Gln Val Ser
                405                 410                 415

Thr Ala Asn Leu Lys Asp Ile Ser Asp Phe Ala Gly Tyr Gln Thr Glu
            420                 425                 430

Phe Leu Arg Leu Phe Gly Phe Gly Ile Asp Gly Val Asp Tyr Asp Gln
        435                 440                 445

Pro Val Asp Val Glu Ala Asp Leu Pro Ser Ala Ala Gln Gln
    450                 455                 460
```